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Notice of Allowability	Application No.	Applicant(s)	
	10/654,888	ARAKI ET AL.	
	Examiner	Art Unit	
	Henry S. Hu	1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

- 1. ☒ This communication is responsive to Pre-Appeal Brief of October 24, 2006.
- 2. ☒ The allowed claim(s) is/are 45-47 and 49-55.
- 3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 - 1. ☒ Certified copies of the priority documents have been received.
 - 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

- 4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 - 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
- 6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

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1. This application is in condition for allowance except for the presence of **Claims 29-44**, which is **non-elected without traverse** as filed on November 30, 2005 (see page **16** top section of Remarks). The cancellation of non-elected **species** Claim 48 is based on the fact that parent Claim 45 along with its elected species Claims 46-47 and 49-55 is found to be an allowable subject matter with the factor of "a" being 1, 2 or 3. Accordingly, **Claims 29-44 and 48 have been cancelled**. An action follows.

EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

The examiner has cancelled the above-mentioned **Claims 29-44**, which are **non-elected without traverse** by Attorney **Abraham J. Rosner** (registration # 33,276) on November 30, 2005. With the authorization of Attorney Rosner from two telephone interviews on December 22 and 26, 2006, the Examiner has thereby cancelled non-elected species Claim 48, amended parent Claim 45 with the factor of "a" being 1, 2 or 3 **only** and also amended dependent Claims 50-55 to be a fluorine-containing polymer as follows:

CLAIMS

Claims 29-44 and 48 please cancel Claims 29-44 and 48

Claim 45 at line 2 of page 10 please replace the phrase of “a is 0 or an integer of from 1 to 3”
with a phrase of “a is 1, 2, or 3”

Claim 50 at line 1 please replace the phrase of “resin composition” with a word of “polymer”

Claim 51 at line 1 please replace the phrase of “resin composition” with a word of “polymer”

Claim 52 at line 1 please replace the phrase of “resin composition” with a word of “polymer”

Claim 53 at line 1 please replace the phrase of “resin composition” with a word of “polymer”

Claim 54 at line 1 please replace the phrase of “resin composition” with a word of “polymer”

Claim 55 at line 1 please replace the phrase of “resin composition” with a word of “polymer”

DETAILED ACTION

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3. Applicants' **Pre-Appeal Brief Request for Review** filed on October 24, 2006 was received. **No claim was amended, cancelled or added.** With above Examiner's amendment, non-elected **Claims 29-44 and species Claim 48** were cancelled. As discussed earlier, the examiner **accepts Applicants' drawing in one sheets with one figure** filed on September 5, 2003 along with this application (brief description is on page **8**). **Claims 45-47 and 49-55 are now pending** with only one independent claim (**Claim 45**). An action follows.
4. Claim rejections in previous Final Office Action filed on May 24, 2006 are now removed for the reasons given in paragraphs 5-11 thereafter.

Allowable Subject Matter

5. Claims 45-47 and 49-55 are allowed.
6. The following is an examiner's statement of reasons for allowance: The above Claims 45-47 and 49-55 are allowed over the closest references:
7. The limitation of parent **Claim 45** in present invention relates to **fluorinated homopolymer and/or copolymers comprising "M" and "A" repeating units** as specified below (the amount of M can be 0.1 to 100 mole%).

The fluorine-containing homo- or co-polymers as described have a "M" structural unit from monomer of $CX^1X^2=CX^3-(CX^4X^5)_a-(C=O)_b-(O)_c-R_f$ wherein the factors of X^1 and X^2 can

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be the same or different from H or F; X^3 is H, F, CH_3 or CF_3 ; X^4 and X^5 can be the same or different from H, F or CF_3 ; Rf can be carbonyl-containing alkylene or alkylene ether; and a is now limited to be an integer of 1-3, while both b and c can be 0 or 1.

See other limitations of dependent Claims 46-47 and 49-55.

8. Applicant has claimed in twice-amended parent **Claim 45** an unexpected way of obtaining fluorinated homopolymer and/or copolymers comprising "**M**" and "**A**" repeating units (since the amount range of M is from 0.1 to 100 mole%). The key point is that "**M**" is from a specific monomer of $CX^1X^2=CX^3-(CX^4X^5)_a-(C=O)_b-(O)_c-Rf$ wherein the factors of X^1 and X^2 can be the same or different from H or F; X^3 is H, F, CH_3 or CF_3 ; X^4 and X^5 can be the same or different from H, F or CF_3 ; and the factor of "**a**" is now limited to be an integer of 1-3, while both factors b and c can be 0 or 1. The key point is that **Rf** is carbonyl-containing alkylene or alkylene ether as specified. No claim was further amended, cancelled or added.

Claims 45-47 and 49-55 have been examined so far since Species # (6) for $a = 1-3$; $b = 0$, $c = 1$ is elected by Applicants as filed on 11-30-2005. Non-elected species Claim 48 is thereby cancelled since a restriction requirement is found to be necessary. For instance, when with the factor of " a " being 0, such monomers may be related to three different types including vinyl ether, vinyl ketone or acrylate, which are all patentably distinct from monomers with the factor of " a " being 1, 2 or 3.

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9. The one and only one 103(a) rejection is relying the combination of two references including Fryd and Koike. However, it cannot stand as follows:

As discussed earlier, **Fryd** in each of his US and WO patents may have disclosed the preparation of many polymers having attached luminescent metal complexes, wherein the complex is made from coordination of functional groups including the claimed enolate or beta-dicarbonyl ligand to metal ions. In a close examination, even if Fryd's many non-fluorinated polymers as disclosed on column 4 at line 12-27 may carry multiple keto groups such as beta-dicarbonyl ligand, Fryd is still silent about making a copolymer using the claimed formula (2) with such a specific fluorinated Rf group. As discussed earlier by Examiner, secondary reference **Koike** may have disclosed two things as: (A) non-crystallinity is existed on fluoropolymer and (B) a metal chelate compound (having multiple keto groups so as to complex metal ions) is distributed in the non-crystalline polymer.

In a very close examination, such multiple keto groups are part of metal chelate compound, which is indeed not attaching to any type of polymer at all. It is known in the art that even the difference is only one carbon atom in the composition or a tiny extra step in making, the final polymeric products can be with very much different properties. It is well known in the art that a mixture of two individual compounds is behaving quite different from a single compound but with two components covalently linked together. **Koike thereby does not disclose the claimed Rf structure having the required unit of keto groups anywhere in the side chain of polymer at all.** Therefore, a motivation to link Fryd with Koike is missing

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(see hindsight reconstruction on page 5 of previous Remarks; also see page 3 in Applicants' **Pre-Appeal Brief Request for Review**).

10. Additionally, the present invention has already shown **unexpected results** in examples along with some control examples for making such a fluoropolymer having such a specific Rf group (see pages 76-91 for **examples 1-8 with control and Tables 1-2**). Therefore, all the above-mentioned references, in combination or alone, does not teach or fairly suggest the limitations of present invention. The Examiner confirms that two A-references are cited on the search report for Applicants' two other articles including **EP 1,375,598 A1 (JP 2001064770)** and **EP 1,498,459 A1 (JP 2002123785)**.

11. After further examination and search, the examiner found the following prior art did not teach the claimed limitation:

US Patent No. 6,176,895 B1 to DeSimone et al. only discloses the use of ligand-containing polymer to extract metal ions in liquid or supercritical carbon dioxide, wherein the ligand bound to the polymer is at a plurality of locations along the chain length (abstract, line 1-15; Figure 1; column 2, line 25-65). **Ligand may be in various types including beta-diketone, phosphate, phosphonate or others** (column 4, line 7-41). **Some fluorinated polymers may be used** but with no detail at all (column 4, line 1-6). Therefore, Rf pendant groups with carbonyl-containing alkylene or alkylene ether are NOT disclosed or suggested in polymer.

EP Patent No. 622,878 A1 to Sharma et al. only discloses a composition by dissolving a rare earth metal complex into a polymeric binder matrix (abstract, line 1-3). The complex compound is made from coordination of **beta-dicarbonyl** functional groups to erbium metal ion (page 3, line 6-19). Therefore, Rf pendant groups with carbonyl-containing alkylene or alkylene ether are NOT disclosed or suggested in polymer.

US Patent No. 6,292,292 B1 to Garito et al. only discloses the preparation of polymers having attached optical amplifying erbium metal complex, wherein the complex is made from coordination of **phosphinate** functional groups to erbium metal ion (abstract, line 1-20; Figure 1; column 2, line 40-56). No metal-dicarbonyl chelating is used at all. Therefore, Rf pendant groups with carbonyl-containing alkylene or alkylene ether are NOT disclosed or suggested in polymer.

12. The key issue on making a fluorinated homopolymer and/or copolymers by comprising a specific monomer of $CX^1X^2=CX^3-(CX^4X^5)_a-(C=O)_b-(O)_c-Rf$, wherein the factor of "a" is 1, 2 or 3, and said Rf is carbonyl-containing alkylene or alkylene ether as specified, cannot be overcome by any or the combination of the above references, therefore, the present invention is novel.

13. As of the date of this office action, the examiner has not located or identified any reference that can be used singularly or in combination with another reference including the

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above references to render the present invention anticipated or obvious to one of the ordinary skill in the art. Therefore, the one independent **Claim 45** is allowed for the reason listed above. Since the prior art of record fails to teach the present invention, the remaining pending dependent **Claims 46-47 and 49-55** are passed to issue.


14. Any inquiry concerning this communication or earlier communication from the examiner should be directed to **Dr. Henry S. Hu** whose telephone number is **(571) 272-1103**. The examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The fax number for the organization where this application or proceeding is assigned is **(571) 273-8300** for all regular communications. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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December 26, 2006



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